

Characterization of degradation in fuel cell components using pressure modulation

Topic suitable for Master's Thesis

In the Fuel Cell & Hydrogen research group at CEET, you can become part of a team of experienced researchers, PhD students and motivated Master students with expertise in materials preparation, electrochemistry and cell characterisation. The institute has a fully equipped electrochemical laboratory with the necessary infrastructure for the planned experimental work.

Polymer electrolyte fuel cells (PEFC) are a renewable source of energy that are gaining public interest due to their high efficiency and emission-free electrical energy. The performance and longevity of PEFCs are determined by various factors, of which pressure has a big impact. Modulation of pressures can be used to stress the cell, but also for characterization. The goal of this work will be to introduce **pressure variations** and measure the response from the system. It is planned to support laboratory measurements with a characterization method.

Within this work, an improved humidification system for single cell PEFCs will be developed and tested. **Working packages are:**

- Literature research of pressure modulation for fuel cells.
- Operate and evaluate of available hardware.
- Characterization of pressure variation in fuel cells.

